

Marble Motion



Name: _____

Purpose: The purpose of this activity is to observe the path of a rolling marble, record time and distance data for the marble and calculate average speed of that marble in its motion. Also, a comparison will be made with the speed of three trials at different incline heights. A graph will be constructed for both parts of the lab activity.

Materials: Metric ruler, three text books, marble, timer or stopwatch, graph paper.

Procedure:

- 1) On a level floor, place a 30-cm metric ruler at an incline of about 1.5 cm (one text book).
- 2) Roll a marble down the incline.
- 3) Record the distance the marble rolls from the bottom of the incline across the floor or table top in two (2) seconds. Repeat this procedure two more times.
- 4) Record the distance the marble travels in three (3) seconds, again making three trials.
- 5) In the second table record the distance the marble rolls from three different incline plane heights in three (3) seconds. Add a book to the stack each time to increase the height of the incline. Run three trials at each height.

Analyzing the Data:

- 1) What is the marble's average speed in two seconds? Three seconds?
- 2) Which average speed is greater?
- 3) What must be true about the marble's speed during the third second?
- 4) How does increasing the height of the incline plane affect the distance that the marble travels in three (3) seconds?

Data:

	Distance in 2 seconds	Distance in 3 seconds
Trial #1		
Trial #2		
Trial #3		
Average Distance		
Average Speed		

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} \quad \frac{\text{cm}}{\text{sec.}}$$

	Distance with 1 book	Distance with 2 books	Distance with 3 books
Trial #1			
Trial #2			
Trial #3			
Average Distance			
Average Speed			